

Features

Unregulated Converters

- 1kVDC and 3kVDC Isolation Options
- Approved for Medical Applications
- Suitable for Automated Assembly
- High Power Density
- Optional Continuous Short Circuit Protection
- Efficiency to 85 %
- RoHS 5/6 Conform

Description

Compared to standard 2 Watt packages, space savings of 80% and 77% respectively are achieved by these RTS & RTD 2 Watts SMD-Miniature DC/DC Converters. They have been specifically designed for applications where board space is at a premium since these 2 Watt converters have only a slightly larger foot print than conventional 1 Watt converters.

With efficiencies up to 85%, external cooling is not needed, as the full output power is available over the operating temperature range -40°C to +85°C. All converters have an I/O-Isolation of 1kVDC, or optionally 3kV, making them suitable for many industrial and medical applications.

Selection Guide

Part Number		Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)	Max Capacitive Load ⁽¹⁾
RTS**-xx3.3	(H)	5, 12, 15, 24	3.3	606	70-75	3300µF
RTS**-xx05	(H)	5, 12, 15, 24	5	400	80-85	1200µF
RTS**-xx09	(H)	5, 12, 15, 24	9	222	80-85	1200µF
RTS**-xx12	(H)	5, 12, 15, 24	12	167	80-85	680µF
RTS**-xx15	(H)	5, 12, 15, 24	15	133	80-85	680µF
RTS**-xx24	(H)	5, 12, 15, 24	24	83	80-85	220µF
RTD**-xx05	(H)	5, 12, 15, 24	±5	±200	70-75	±470µF
RTD**-xx09	(H)	5, 12, 15, 24	±9	±111	75-78	±470µF
RTD**-xx12	(H)	5, 12, 15, 24	±12	±83	75-83	±220µF
RTD**-xx15	(H)	5, 12, 15, 24	±15	±66	75-85	±220µF
RTD**-xx24	(H)	5, 12, 15, 24	±24	±42	78-85	±100µF

xx = Input Voltage. Other input and output voltage combinations available on request.

* add Suffix "P" for Continuous Short Circuit Protection, e.g. RTS-0505/P, RTD-0505/HP

* add suffix -R for tape&reel packing e.g. RTS-0505-R. For more details see Tapes Section.

Case and Pinning Options (note restrictions on /H option)

RTS** : ** without marking denotes 5 pins out of 8 fitted (includes /H option)
** with marking 8 denotes 8 pins out of 8 fitted (/H option not available)

RTD** : ** without marking denotes 6 pins out of 10 fitted (includes /H option)
** with marking 10 denotes with 10 pins out of 10 fitted (/H option not available)

Specifications (measured at $T_A = 25^\circ\text{C}$, nominal input voltage, full load and after warm-up)

Input Voltage Range		±10%
Output Voltage Accuracy		±5%
Line Voltage Regulation		1.2%/1% of V_{in} max.
Load Voltage Regulation (10% to 100% full load)	3.3V output types 5V output type 9V, 12V, 15V, 24V output types	20% max. 15% max. 10% max.
Output Ripple and Noise (20MHz limited)		150mVp-p max.
Operating Frequency		20kHz min. / 50kHz typ. / 85kHz max.
Efficiency at Full Load		70% min. / 80% typ.
Minimum Load = 0%	Specifications valid for 10% minimum load only.	

cont.

ECONOLINE

DC/DC-Converter

with 3 year Warranty

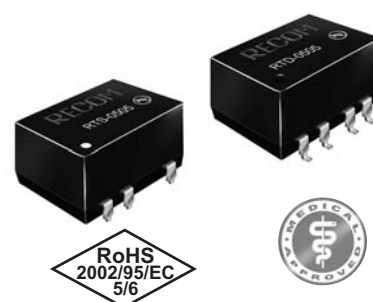
RECOM

2 Watt

SMD

Single &

Dual Output



EN-60950-1 Certified
(All Suffixes)

EN-60601-1 Certified
(Suffix H3)

RTS-RTD

Refer to Application Notes

Refer to Application Notes

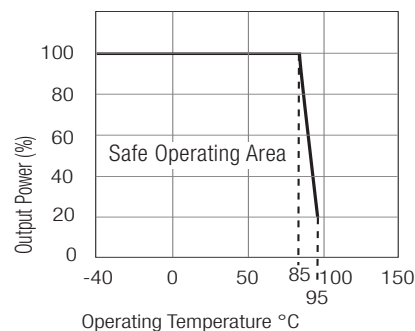
Specifications - Continued

Isolation Voltage		(tested for 1 second)	1000VDC min.
Rated Working Voltage	H-Suffix	(tested for 1 second) (long term isolation)	3000VDC min. see Application Notes
Isolation Capacitance			40pF min. / 115pF max.
Isolation Resistance			10 GΩ min.
Short Circuit Protection			1 Second
P-Suffix			Continuous
Operating Temperature Range (free air convection)			-40°C to +85°C (see Graph)
Storage Temperature Range			-55°C to +125°C
Reflow Temperature	ROHS compliant		245°C (30 sec) max.
Vapour Phase Process	(for more details see Application Notes)		230°C (90 sec) max.
Relative Humidity			95% RH
Package Weight	RTS types		2.1g
	RTD types		2.5g
Packing Quantity	RTS, RTS8		40 pcs per Tube
	RTS12, RTD		33 pcs per tube
	All Types		500 pcs per Reel
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	886 x 10 ³ hours
(+85°C)		using MIL-HDBK 217F	128 x 10 ³ hours

Notes

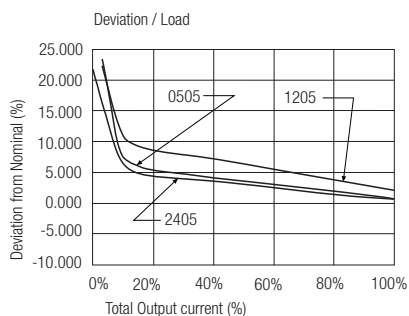
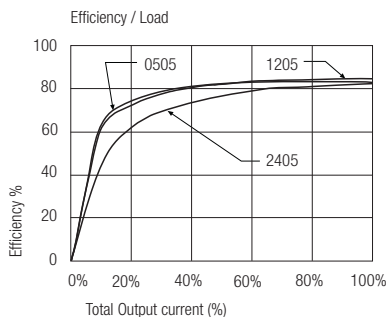
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

Derating-Graph (Ambient Temperature)

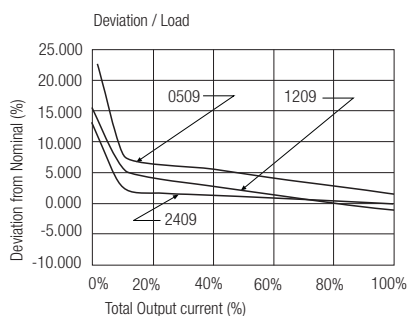
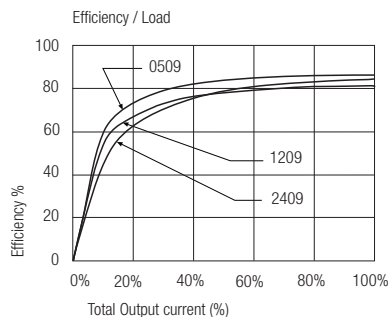


Typical Characteristics

RTS-xx05

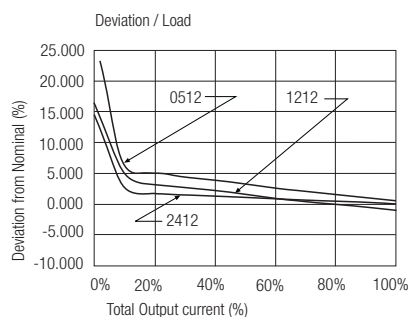
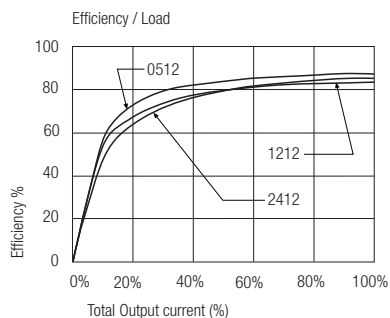


RTS-xx09

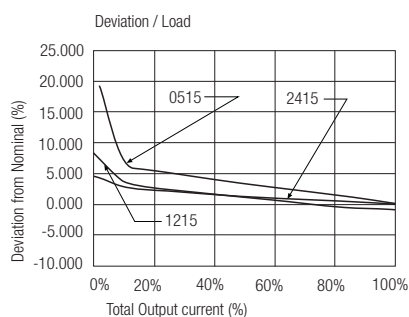
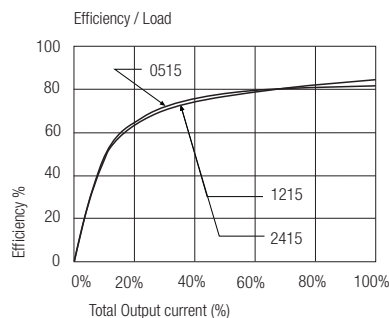


Typical Characteristics

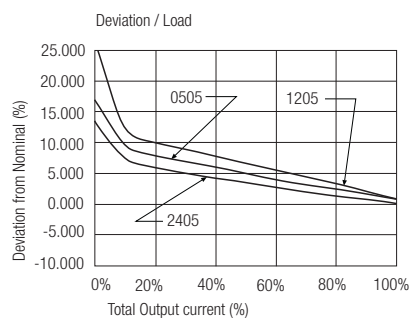
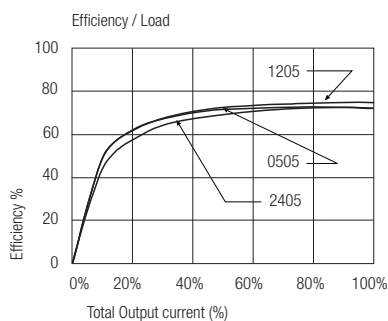
RTS-xx12



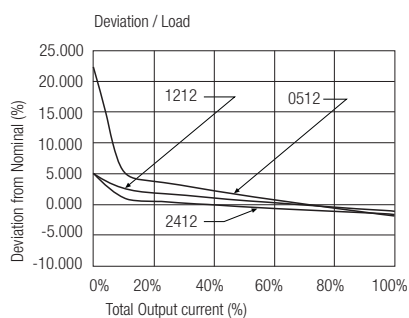
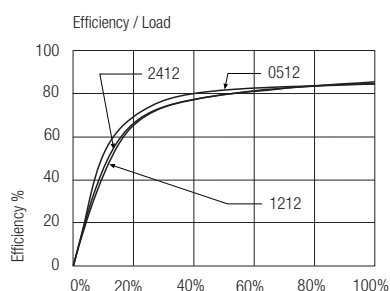
RTS-xx15



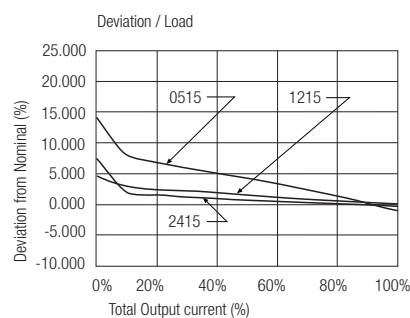
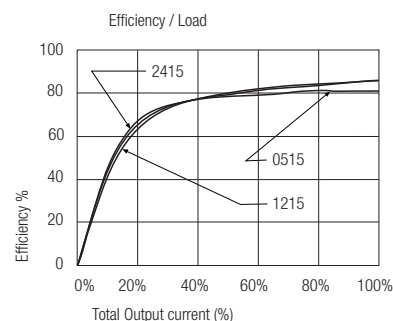
RTD-xx05



RTD-xx12

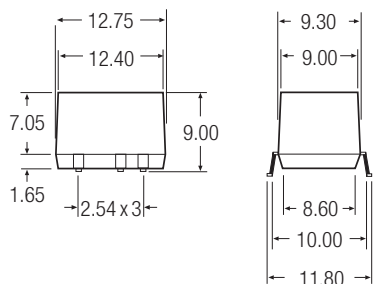


RTD-xx15

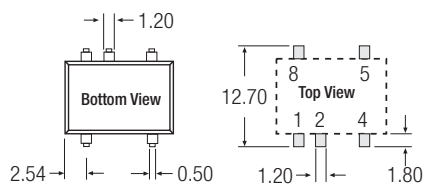


Package Style and Pinning (mm)

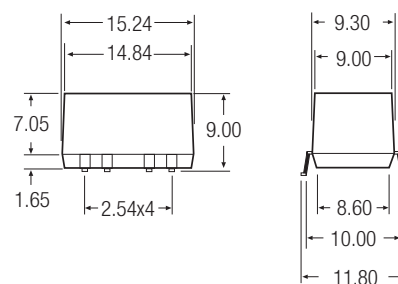
8 PIN Single SMD Package



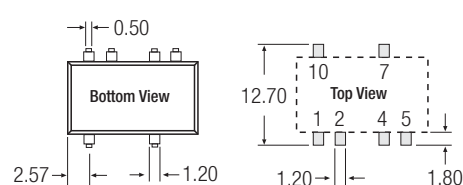
Recommended Footprint Details



10 PIN Dual SMD Package



Recommended Footprint Details



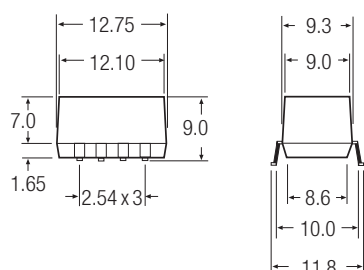
Pin Connections

Pin #	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
4	-Vout	Com
5	+Vout	-Vout
7	No Pin	+Vout
8	NC	No Pin
10	No Pin	NC

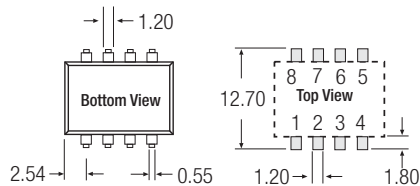
NC = No Connection

XX.X ± 0.5 mm
XX.XX ± 0.25 mm

Full 8 PIN Single SMD Package

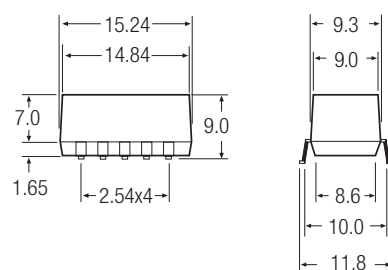


Recommended Footprint Details

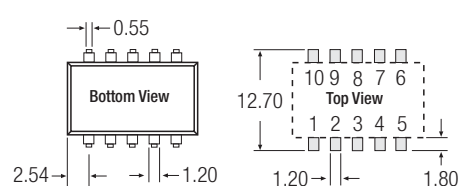


Note: /H option is not available in these pin packages

Full 10 PIN Dual SMD Package



Recommended Footprint Details



Pin Connections

Pin #	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	NC	NC
4	-Vout	Com
5	+Vout	-Vout
6	NC	NC
7	NC	+Vout
8	NC	NC
9	-	NC
10	-	NC

NC = No Connection

XX.X ± 0.5 mm
XX.XX ± 0.25 mm